

State of California
Department of Conservation

MINING AND GEOLOGY BOARD

ANNUAL REPORT

1985



Dardanelles
Alpine County, California

View to the Northwest

State of California
MINING AND GEOLOGY BOARD
ANNUAL REPORT
1985

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ABSTRACT

The State Mining and Geology Board has broad policy responsibilities for earth science, mineral resource conservation, mining, and geologic hazards under the Surface Mining and Reclamation Act. The Board also establishes policy that guides the implementation of the Alquist-Priolo Special Studies Zones Act, which addresses the hazards of ground rupture from active faulting, and for the Landslide Hazard Identification Act, which provides for a state-local cooperative mapping program to identify landslide-prone areas in the path of urbanization. During the 1984-85 fiscal year, the Board took a number of actions fulfilling these responsibilities.

The Board initiated the designation of aggregate resources in seven metropolitan areas in the State, which include the Claremont-Upland, San Bernardino, Saugus-Newhall, Palmdale, North San Francisco Bay, South San Francisco Bay, and Monterey Bay Production-Consumption Regions.

Designation regulations for the Western San Diego County Production-Consumption Region were approved and incorporated into State Law.

Four nonurban classification reports (Sutter Creek, Folsom, Auburn, and Halloran Spring 15-minute quadrangles) were reviewed and transmitted to affected lead agencies. In addition, two petitions for mineral land classification were accepted.

The Board adopted policy resolutions for more effective implementation of the Surface Mining and Reclamation Act, interim criteria for mineral resource management policies, and for the reclamation program.

Forty-three maps of new and revised Special Studies Zones were reviewed and issued pursuant to the provisions of the Alquist-Priolo Special Studies Zones Act.

The pilot program for implementation of the Landslide Hazard Identification Act concluded with the release of preliminary maps for five areas (located in the Counties of Sonoma, Contra Costa, Los Angeles, Ventura, and San Diego). The Geohazards Committee, in cooperation with the Department of Conservation's Division of Mines and Geology, monitored the progress of the first year's maps and developed recommendations for the final product.

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Part I.

INTRODUCTION

A. State Mining and Geology Board, Organization and Responsibilities

The State Mining and Geology Board is composed of nine members appointed by the Governor for four-year terms. By statute, the Board is comprised of individuals with specified professional backgrounds in geology, mining engineering, environmental protection, chemical engineering, urban planning, landscape architecture, mineral resource conservation and seismology, and one public member.

The Board has broad policy responsibilities under the Surface Mining and Reclamation Act of 1975 for establishing and maintaining State policy for surface mining and reclamation and for the conservation and development of mineral resources.

The Board represents the State's interest in the development of information necessary to the understanding and utilization of the State's terrain and seismological and geological information pertaining to earthquake and other geological hazards. General policy for the State's geological survey, the Department of Conservation's Division of Mines and Geology, is established by the Board. These responsibilities recognize the impacts that California's complex geology, large amounts of federally managed lands, high mineralization, and potential for geologic hazards have on the State's economy, land use, and public safety.

The Board has policy responsibilities for the Alquist-Priolo Special Studies Zones Act. Under this Act, hazardous fault zones are delineated by the State Geologist. This information is provided to local government to assure that structures for human occupancy are not built across such faults. In addition, the Board establishes guidelines and priorities that enable the Department of Conservation's Division of Mines and Geology to carry out recently enacted legislation creating the Landslide Hazard Identification Program (AB 101, Moore, Statutes of 1983).

To enable the Board to meet its responsibilities, five permanent committees have been established. These include the Policy Committee, the Classification-Designation Committee, the Education Committee, the Geohazards Committee, and the Legislation, Government and Public Relations Committee. The Board is assisted by a two-person staff.

Part II.

MAJOR BOARD ACTIONS

A. Mineral Resource Conservation

California is one of the nation's leading mining states in terms of both value and diversity of minerals produced. Approximately 1,500 active mines produce almost \$2 billion worth of non-fuel minerals annually.

In the early 1970's, the Department of Conservation's Division of Mines and Geology estimated that California would face a \$17 billion loss of mineral resources by the year 2000 if present land uses continued. This projected loss represents almost nine years of the State's current mineral production.

California is faced with increasingly difficult land use decisions. Mining is not compatible with most other land uses--conflicts between homeowners and quarry operators are common at public hearings. In the public view, other land resources such as agriculture lands, timber stands, and sensitive ecological or scenic areas can be more valuable than the underlying mineral deposits. Competition for land use priorities is intense. Unfortunately, many land use decisions are made without considering whether mineral resources are present. Mineral resources thus lost are rarely located or recovered later.

California's Surface Mining and Reclamation Act, or SMARA, resolved these two seemingly contradictory demands -- the need for a continuing supply of mineral resources and the assurance that minings' adverse impacts would be eliminated. SMARA created a program that assures the reclamation of mined lands and provides mineral information necessary for local management of mineral resources needed for the future.

1. Summary of classification-designation program

The rapid growth of many California communities, particularly during the past two decades, has served to emphasize the continuing importance of mineral resource conservation as a land-use issue. To support the maintenance of our existing community structure as well as provide for its continued growth, adequate supplies of a variety of mineral commodities must be available at a reasonable cost. Yet, urban expansion itself has been a major cause of a decline in the availability of many important minerals. In many areas, for example, pressure from competing land uses has severely reduced or completely eliminated access to available mineral resources such as sand and gravel deposits. The loss of these deposits has occurred because land-use planning decisions have often been made with little, if any, knowledge of the location and importance of these resources.

In an effort to remedy this problem, SMARA provides for a mineral lands inventory process termed "classification-designation", which jointly involves State and local government. Information on the location of important mineral deposits is developed by the Division through the process of mineral land classification. This information is used by the Board in designating those deposits that are of economic significance to a region, the State, or the nation. Local government uses this information in developing mineral

resource management policies and in making land-use decisions to assure the conservation and development of these resources.

During the first phase of this program, classification, the State Geologist is responsible for preparing a geological inventory of selected mineral commodities within a defined study region. Major objectives of a classification report include: (1) identifying the market area of the commodity (a production-consumption region); (2) projecting the future (50-year) needs for the commodity within the study region; and (3) geologically classifying the lands within the region as to the presence or absence of the commodity.

The State Geologist classifies mineral lands solely on the basis of geologic factors. Existing land-use, by statute, is not considered. Classification of an area as a Mineral Resource Zone-2 (MRZ-2) indicates the existence of a deposit that meets certain criteria for value and marketability. The classification report also describes other categories of mineral resource zones -- MRZ-1, 3, and 4. The first two of these categories are used to indicate if an area contains no resources (MRZ-1) or contains potential but presently unproven resources (MRZ-3). Areas where it is not possible to assign any of these categories are classified MRZ-4.

In many regions, large portions of the areas classified as MRZ-2 are already committed to various urban uses, which limit access to the underlying resources. As an aid to local planning agencies, classification reports prepared for metropolitan areas also identify MRZ-2 quality deposits, or portions of these deposits, that have not been preempted by incompatible land uses such as urbanization. These nonurbanized areas, called resource sectors, are important because they contain resources that remain potentially available for future use. The identification of resource sectors also facilitates estimating the volume of aggregate material that is available in the production-consumption (P-C) region. Resource sectors are typically considered for designation by the Board.

Once the classification report has been completed, the Board may choose to proceed with the second step in SMARA's mineral lands identification process -- designation of those deposits that are of regional or statewide significance. In contrast to classification, which inventories mineral deposits without regard to land use, the purpose of designation is to identify those deposits that are of prime importance in meeting the future needs of the study region and that remain available from a land use perspective.

The first mineral commodity selected by the Board for classification by the State Geologist in urban and urbanizing was construction aggregate -- sand, gravel, and crushed rock. While its importance is often overlooked, sand and gravel is an essential commodity in society. As a construction material, sand and gravel is a key component in products such as Portland cement concrete, asphaltic concrete, railroad ballast, stucco, road base, and fill. Aggregate normally provides 80 to 100 percent of the material volume in these products. Portland cement concrete, in turn, is also used in a number of building materials such as concrete blocks and pipes, foundation pilings, precast concrete beams, and tilt-up concrete walls. In total, aggregate as a basic construction material has ripple effects throughout the economy. The availability of aggregate is essential, for example, to the construction

industry. Developers, building and highway contractors, cement manufacturers, asphalt producers, construction workers, and truck drivers are dependent, either directly or indirectly, on a ready supply of reasonably priced construction aggregate. Therefore, the availability of aggregate deposits and their proximity to markets are critical factors in the strength of the State's economy.

With the passage of SB 1300 in 1979, the State also has initiated mineral land classification studies in the highly mineralized Sierra Nevada and the California Desert Conservation Area. Here the focus is on the potential for minerals other than construction aggregate in the more rural areas of the State.

SMARA provides a tool to prevent unnecessary loss of valuable mineral-bearing lands to other uses. The rewards of this program will be enormous for future generations who must depend on today's foresight and commitment to the conservation of mineral lands. The present urgency is to complete the land classification statewide, and to encourage local governments to make firm plans to conserve their mineral-bearing lands in the face of increasing competition from alternative land-uses. Thus, pressing land-use decisions can be made now while still preserving the option for future development of mineral materials needed by our society.

2. Designation of Regionally Significant Construction Aggregate Resources

During the 1984-85 fiscal year, the Board completed the designation of aggregate resources in the San Diego metropolitan area and continued work on the process in seven other regions. The following briefly summarizes these actions.

a. Western San Diego County Region

Designation of the Western San Diego County Production-Consumption Region was completed and formally transmitted to affected lead agencies, which include the cities of Oceanside, San Marcos, Escondido, San Diego, El Cajon, and Chula Vista, and the County of San Diego, in May 1985. In total, the Board designated approximately 7.2 billion tons of construction aggregate as being of regional significance. These designated aggregate resources are located in a number of areas throughout the region, such as the San Luis Rey River, Pauma Valley, San Pasqual Valley, Kearney Mesa, the San Diego River, the Tijuana River, and the Border Highlands.

The San Diego region has an estimated need for 760 million tons of construction aggregate over the next 50 years. Existing aggregate reserves (resources permitted for mining) for the region are approximately 430 million tons, an amount sufficient to supply the region for 32 years.

The San Diego area faces difficulties in meeting future demand for construction aggregate due to the uneven geographical distribution of resources throughout the region, a shortage of natural sand available to serve the metropolitan area, and the high rate of urbanization occurring in the region.

Progress of Classification-Designation Program

Index map of California, showing location and status of Aggregate Production Consumption Regions being classified and/or designated in the Urban SMARA Program as of June 30, 1985

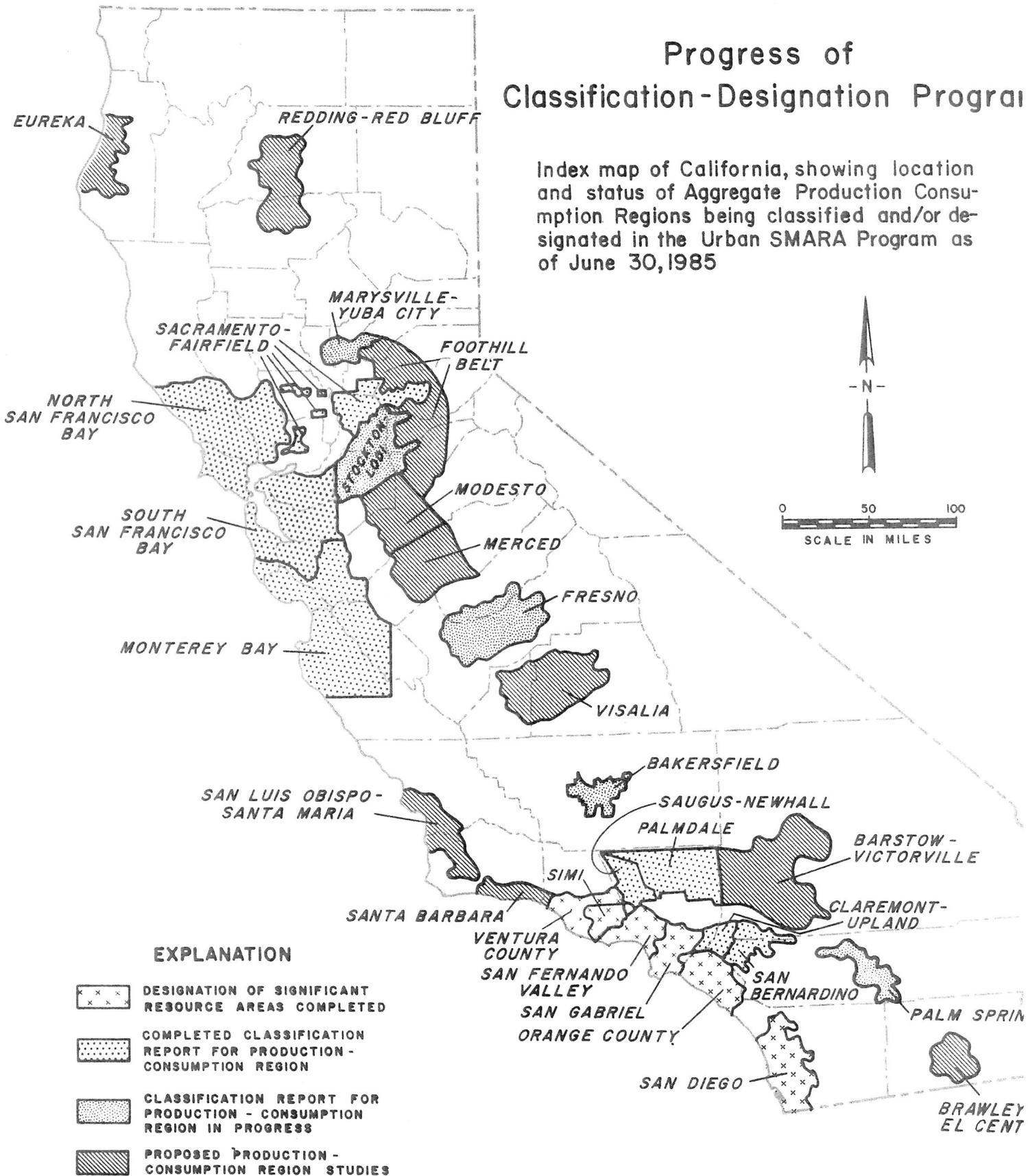


Figure 1. Status of the City SMARA Classification Designation Program, June 30, 1985.

b. Designation of San Francisco-Monterey Bay Areas; Claremont-Upland and San Bernardino Regions; and Saugus-Newhall and Palmdale Regions

In recognition of urbanization in three major metropolitan areas of the state, the Board initiated the environmental review and designation processes simultaneously in seven production-consumption regions which include the San Francisco-Monterey areas; Claremont-Upland and San Bernardino regions; and the Saugus-Newhall and Palmdale regions. The intent behind this coordinated effort was to bring the Board's mineral inventory procedures in line with the completion of classification reports by the Department of Conservation's Division of Mines and Geology statewide -- a major benefit being the completion of designation of rapidly-urbanizing areas in a more timely fashion.

The classification report for the San Francisco-Monterey Bay areas was accepted in January 1984, and followed in July 1984 by a workshop. The objectives of the workshop were to provide an opportunity for a public briefing and discussion of the classification report and to determine the need to proceed with designation of regionally significant aggregate resources in the areas. The final report was transmitted to lead agencies in the affected study areas in February 1985.

Classification reports for the Claremont-Upland and San Bernardino Regions and the Saugus-Newhall and Palmdale regions were accepted by the Board in August 1984 and transmitted to lead agencies in October 1984 and February 1985, respectively.

The Board initiated the designation process in these areas simultaneously and directed the preparation of three environmental impact reports (EIRs) to assist in reaching a decision on areas that ought to be designated as being of statewide or regional significance. Public hearings on the draft EIRs were held in March 1985. Comments received at the hearings and during the written comment period were incorporated into the final EIR, certified in August 1985.

The next step in the process, the adoption of regulations, will be completed during the 1985-86 fiscal year.

Descriptions of the areas and regions follow:

- (1) The San Francisco-Monterey Bay study area consists of three contiguous production-consumption (P-C) regions that cover all or portions of 12 northern California counties. These three regions cover a diverse geographical area that ranges from the highly-urbanized communities of the San Francisco Peninsula and East Bay to the predominantly rural, outlying areas of the Alexander Valley in northern Sonoma County and the Salinas Valley in southern Monterey County.

The first of these three study areas is the North San Francisco Bay P-C region. This region covers all of Marin, Napa, and Sonoma Counties and the extreme western portion of Solano County. Communities in this region include such cities as Cloverdale, Healdsburg, Santa Rosa, Petaluma, Sonoma, Napa, Vallejo, and San

Rafael. This region has a population of approximately 790,000. Land use in the North Bay region includes both medium-sized residential/commercial centers such as Santa Rosa and large agricultural areas such as the Napa Valley and middle reach of the Russian River. This region also contains major North Coast recreation areas such as Point Reyes National Seashore, Bodega Bay, and the Marin headlands.

The central portion of the study area is located within the South San Francisco Bay P-C region. This region covers all of Alameda, Contra Costa, San Francisco, and San Mateo Counties and the northern portion of Santa Clara County. Communities in this P-C region include such cities as Oakland, San Francisco, Concord, Antioch, Livermore, Fremont, San Jose, Palo Alto, and Pacifica. This region has a population of approximately 4.4 million. Except for the area southeast of Mount Diablo and the coastal side of San Mateo County, the South Bay region is characterized by a highly-urbanized setting.

The southern portion of the project study area is located within the Monterey Bay P-C region. This region covers all of Santa Cruz County, the northern portion of Monterey County, the northwestern portion of San Benito County, and the southern portion of Santa Clara County. The population of this region is approximately 700,000. Land use in this region is similar to that of the North Bay in that the area contains both urban centers such as Santa Cruz, Watsonville, Gilroy, Hollister, and Monterey as well as large agricultural/open space areas such as the Salinas Valley, San Juan Valley, and Santa Cruz Mountains. This region contains major Central Coast recreational areas including Monterey Bay, the Del Monte Forest (Pebble Beach), and several State parks.

Between 1971 and 1980, an average of 34.1 million tons of aggregate per year were produced and consumed in the San Francisco-Monterey Bay area. This amounted to one-fourth of California's average annual production over the same period.

In past years, the population centers of the San Francisco-Monterey Bay area have been served from local deposits of high-quality material from which aggregate could be obtained and utilized at relatively low costs. However, high-quality deposits are rapidly being depleted and many of the potential sources already have been lost to irreversible land uses that are incompatible with mining. Not all of the remaining sand, gravel, and crushed stone sources in the San Francisco-Monterey Bay area can supply materials for use in higher-grade aggregate products such as Portland cement concrete. Some deposits have been subjected to extreme weathering by groundwater, or contain chemically reactive elements that make them unacceptable for this use. Rarely is in-place aggregate raw material, even from the highest-grade deposits, physically or chemically suited for every type of aggregate use. Therefore, every potential deposit must be tested to determine how much of its material can meet specifications for a particular type of use, and what processing is required.

(2) Claremont-Upland and San Bernardino

The Claremont-Upland P-C region is approximately 230 square miles in area and includes the cities and communities of Pomona, Claremont, Upland, Ontario, Cucamonga, and La Puente. It is bordered on the north by the Angeles National Forest. Other production-consumption regions located adjacent to this region are the San Bernardino P-C Region to the east, the Orange County-Temescal Valley P-C Region to the south, and the San Gabriel Valley P-C Region to the west.

Based upon the projected population increase and the predicted per capita consumption rates, approximately 245 million tons of aggregate will be required to satisfy demand in the Claremont-Upland Production-Consumption Region through the year 2031.

Current reserves (aggregate material believed to be acceptable for commercial use that exist within property owned or leased by an aggregate-producing company and for which permission allowing extraction and processing has been granted by the proper authorities) total approximately 55 million tons, which is less than one-fourth (13-year supply) of the requirements needed for the 50-year period.

The San Bernardino P-C Region is approximately 1,100 square miles in area and includes such population centers as San Bernardino, Riverside, Fontana, Redlands, Banning, Hemet, and Elsinore. It is bordered by two other P-C Regions, the Claremont-Upland region on the northwest, and the Orange County-Temescal Valley region on the southwest.

The total projected aggregate consumption to the year 2032 is estimated to be 476 million tons. Unless additional resources are permitted for mining or alternative resources are utilized, existing reserves will be depleted in 41 years.

(3) Saugus-Newhall and Palmdale

The Saugus-Newhall P-C Region includes the communities of Saugus and Newhall, and parts of the Angeles and Los Padres National Forests. The western Ventura County, San Fernando Valley and the Palmdale P-C regions are located adjacent to the study area--western Ventura and San Fernando being located on the southwest, and Palmdale being located on the east.

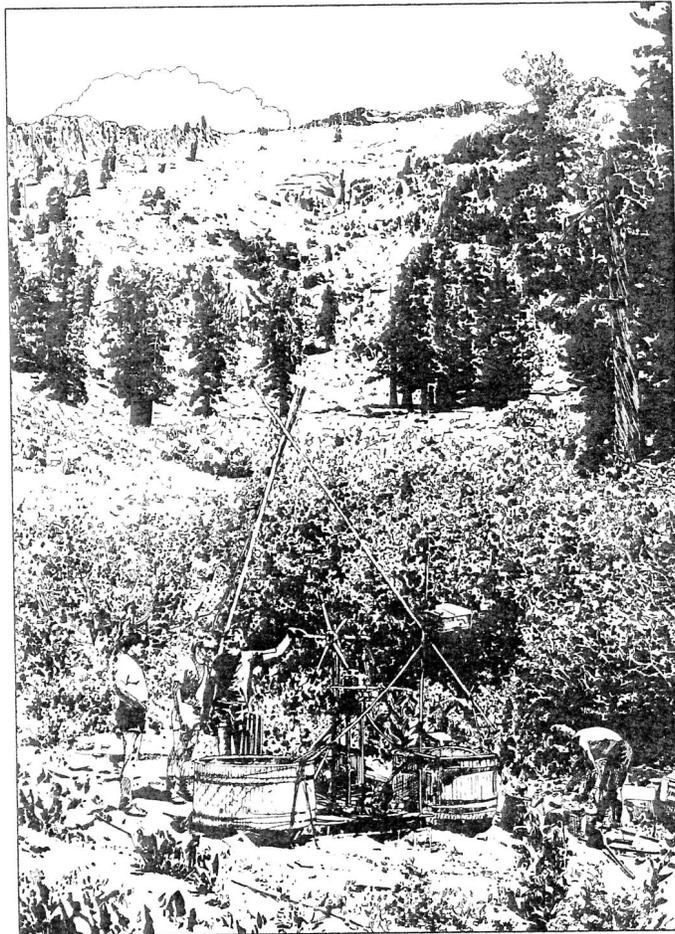
The Saugus-Newhall P-C Region has an average per capita consumption rate of 10 tons of total aggregate per year. Based on this rate and future population projections, approximately 54 million tons of aggregate will be needed to supply this region for the next 50 years (to the year 2032). The estimated amount of material needed to meet the 50-year demand for Portland cement concrete (PCC) quality aggregate is 27 million tons (50 percent of total demand).

Aggregate resources are distributed throughout the region, being found in both urbanized areas such as Newhall and Saugus, and rural areas, such as some areas of the Antelope Valley and the Angeles National Forest. The resource areas in the Saugus-Newhall P-C Region contain the channel and flood-plain deposits of the Santa Clara River, the well-consolidated non-marine sediments of the Mint Canyon Formation, and the anorthosite and gabbro in the San Gabriel Mountains.

The Palmdale P-C Region population centers include Palmdale and Lancaster. The lands within Edwards Air Force Base are not located in this P-C Region. The combined population of the Saugus-Newhall and Palmdale P-C regions is approximately 89,000.

The Palmdale P-C Region has an average per capita consumption rate of 12.2 tons of total aggregate per year. Based on this rate and future population projections, approximately 122 million tons of aggregate will be needed to supply this region for the next 50 years. The estimated amount of material needed to meet the 50-year demand for Portland cement concrete (PCC) quality aggregate is 61 million tons (50 percent of total demand).

The resource areas in the Palmdale P-C Region contain the Little Rock Creek Alluvial Fan, and the Big Rock Creek Alluvial Fan.



"Core Drilling Operation, Alpine County" courtesy of Jim Williams

3. Completion of Nonurban Classification Reports

The past year reflects significant progress for mineral inventory studies in nonurban areas. The Board has assigned the highest priority for classification in the nonurban program to the Sierra Nevada Foothills and the California Desert Conservation Area. This program is focused on these areas because of their known mineral wealth and because both regions are subject to land-use actions that could conflict with the development of important mineral resources -- the Sierra Nevada Foothills because of urbanization, and the California Desert Conservation Area because of on-going federal planning and land use decisions.

a. Sierra Nevada Foothills Area

During the past year, the Board has accepted and formally transmitted classification reports for the Sutter Creek, Auburn, and Folsom U.S. Geological Survey 15-minute Quadrangle map sheets.

The Sutter Creek Quadrangle encompasses about 240 square miles of land lying along the western foothill region of the Sierra Nevada. Most of the study area is in Amador County, with a small portion in Calaveras County. Major conclusions of this report include:

- One of the most important high quality clay, speciality sand, and lignite resource areas in California is situated in the western part of the Sutter Creek quadrangle. If protected from land uses that are incompatible with mining, this area can continue to be an important source of the mineral commodities throughout the foreseeable future.
- A 14-mile segment of the well-known Mother Lode gold belt extends through the Sutter Creek quadrangle. Information obtained during this study and the study of adjacent quadrangles has led to the conclusion that the Mother Lode gold belt is still a significant gold resource area.
- Several geologic formations, exposed within the Sutter Creek quadrangle, contain base and precious metal deposits of volcanogenic origin. The overall economic potential of local deposits along this foothill copper-zinc belt is considered to be high.
- Eight separate areas underlain by carbonate rock (an industrial mineral) have been classified as containing rock suitable for use as a marketable product. Although these deposits are small in areal extent, these lensoidal rock bodies typically extend to considerable depths; therefore, they most likely represent carbonate deposits of significant economic potential.

The Sutter Creek 15-minute Quadrangle classification report was accepted in August 1984 and transmitted to affected lead agencies.

The Auburn Quadrangle classification report was accepted in August 1984, and transmitted to affected lead agencies in October 1984. This quadrangle covers portions of Placer and El Dorado Counties. The

completed Georgetown Quadrangle is located immediately east of this study area. Major conclusions of this report include:

- A significant deposit of high calcium, industrial-grade limestone is located in the study area. A large portion of this deposit remains available for mining.
- The Auburn Quadrangle has a three-square-mile area that contains a chromite-rich deposit of ultramafic rock. This deposit, although not presently in production, has significant mineral potential.
- The Ophir gold mining district, a historic mining area, has been classified as containing significant inferred mineral resources. Existing and planned urbanization poses a threat to mineral development in this area.
- Potentially significant deposits of gold and chromite may be present in modern and ancient stream channels located throughout the study area. Additional exploration is necessary to determine the importance of these deposits.

The Folsom Quadrangle classification report was transmitted to lead agencies in December 1984. This quadrangle encompasses about 240 square miles of land in the central Sierra Nevada foothills. It is located along a belt of highly mineralized rocks that form the western Sierra Nevada foothills. Major conclusions of this report include:

- A high quality limestone deposit, located along the east-central margin of the study area in El Dorado County, known as the Marble Valley limestone, is currently being mined, processed, and marketed for use in the manufacture of plate glass, container glass, feed, and filler.
- Several geologic formations exposed within this quadrangle could contain base and precious metal deposits of volcanogenic origin. Several areas located just outside the study area are classified as containing significant base/precious metal deposits of volcanogenic origin. Although presently undiscovered, similar deposits associated with these rocks could exist within the Folsom quadrangle.
- A five-mile long, gold-bearing quartz vein system, is located a few miles south of the City of Folsom. The vein system and associated in situ soil and stream placer deposits had been worked intermittently from the gold rush days into the 1920's. The overall significance of the mineralized system cannot be determined from available data.
- Economic clay, industrial sand, and lignite deposits could be present in the Eocene Lone Formation which is exposed in this quadrangle. These commodities are currently being mined from this formation southeast and northwest of the study area.
- Potential for placer gold exists most notably in the southwestern quarter of this quadrangle. This area borders the many thousands of

acres that were mined by bucket-line dredges operating in the Folsom-American River dredge fields.

- Known chromite deposits occur in most of the ultramafic rock bodies exposed in this quadrangle. All discoveries made thus far have been relatively small, low-grade deposits exposed at the surface.

b. California Desert Conservation Area (CDCA)

The Board also accepted and formally transmitted, in October 1984, a nonurban classification report for an area in the CDCA, the Halloran Spring 15-minute Quadrangle.

The Halloran Spring study area is located in the eastern Mojave Desert, approximately 10 miles east of Baker, California, and can be easily accessed by Interstate Highway 15. Land-use jurisdiction in this area is the responsibility of the County of San Bernardino. Major findings of the report include:

- The Halloran Spring Quadrangle contains significant and potentially significant deposits of four industrial minerals: carbonate rock, quartzite, talc, and volcanic cinders.
- Several geologic terrains were identified in the study area that have potential significance for gold and silver.
- Several small copper-bearing deposits were identified in the Halloran Spring Quadrangle.

4. Classification Reports Prepared in Response to Petitions

Mineral deposits threatened by incompatible land uses that may prevent mining may be brought to the Board's attention by petition. To qualify for a petition, the subject deposit(s) must meet a certain economic threshold and be faced with an imminent land-use threat.

As with all other classification reports, lead agencies are required by SMARA to incorporate this information into the local general planning process.

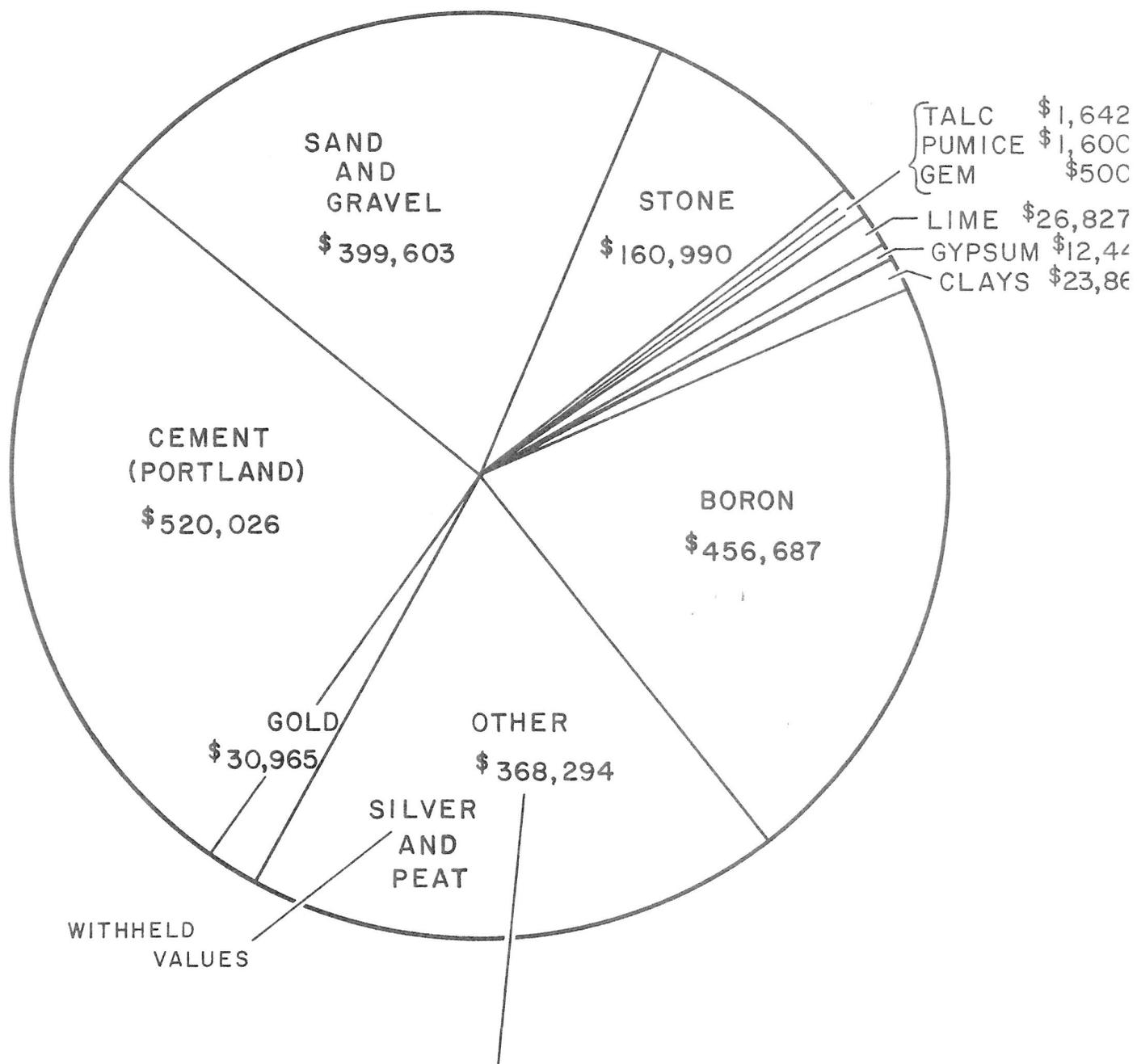
During the past year, the Board has accepted two new petitions for classification.

a. White Knob and White Knob Annex

In March 1985, the Board accepted a petition from Pluess-Stauffer, Inc., for the classification of the White Knob and White Knob Annex limestone deposits. This deposit, located in the Lucerne Valley area of San Bernardino County, covers an approximately one-half square-mile area and represents an important resource which supplies carbonate raw materials for a myriad of manufacturing industries within the western United States, Canada, and Mexico. The limestone produced from the Pluess-Stauffer deposit is used in such varied products as: an extender for

1984 NONFUEL MINERAL PRODUCTION IN CALIFORNIA

(Value in Thousands of Dollars)



Combined value of asbestos, calcium chloride, cement (masonry), clays (fire clays), copper, diatomite, feldspar, iron ore, lead, magnesium compounds, molybdenum, perlite, potassium salts, rare-earth concentrates, salt, sodium carbonates, sodium sulfate, tungsten ore and concentrate, wollastonite, and withheld values.

Source: U.S. Bureau of Mines Minerals Yearbook 1984, Volume II.

the plastic industry, a filler product used by the paint and rubber industry, a component in drywall, textured ceilings, and other industrial applications as well. Urban encroachment in the proximity of the processing plant and deposit poses a potential land use conflict which could curtail future production, and would likely have a disruptive effect upon a domestic and an international consuming market which requires this natural resource for their operations.

The Pleuss-Stauber deposits in Lucerne Valley are among the few producing sources of high calcium limestone in California that can be used as whiting. The lack of impurities allow it to retain a very white color when crushed and finely ground. It is the principal product of the company's Lucerne plant in terms of sales dollars and is tailored for a specialized market where it commands a premium price.

The State Geologist's report, "Mineral Land Classification of the Pleuss-Stauber (California), Inc. White Knob Limestone Deposit, Lucerne Valley, San Bernardino County" was accepted by the Board in August 1985 and transmitted to San Bernardino County.

b. Harvey Clay/Shale Deposit

In May 1985, the Board accepted a petition from Mr. Willard L. Harvey, of W.L. Harvey and Sons, for the classification of 160 acres of clay/shale deposits near the City of Colfax, Placer County. The deposit is significant and appears to be threatened by development on the western side of the property, which will create a distinct conflict with mineral extraction. The classification report is anticipated to be completed in fiscal year 1985-86.

5. Local Agency Use of Classification Reports

a. General Plan Revisions

Once a classification or designation report has been received by local lead agencies (cities and counties), SMARA requires that these agencies establish mineral resource management policies, to be incorporated into their general plans, that (1) recognize the mineral information provided by the State; (2) assist in the management of land use that affects areas of statewide or regional significance (designated areas); and (3) emphasize the conservation and development of identified mineral deposits.

While SMARA contains a specific mandate requiring development of mineral resource management policies that will implement the mineral resource conservation objectives of SMARA, it leaves little guidance as to how these policies should be structured. To address this issue, the Board directed a review of existing Board policies, lead agency response to state, lead agency response to date, and the Act for the purpose of developing an effective set of criteria for compliance with this mandate.

Resolution #85-15, adopted May 17, 1985 is the result of that review. The Board, by means of this resolution, adopted interim criteria for the

development of mineral resource management policies, to be effective until the formal adoption and approval of State regulations governing these criteria could be achieved.

Criteria used by the Board for review and comment on the mineral resource management policies include:

- Lead agencies are encouraged to incorporate into their general plan (1) a summary of the information provided by the classification and designation reports or incorporate SMARA and Board policy by reference, and (2) maps of mineral resource areas (or incorporate by reference the classification and designation maps provided by the Board).
- Lead agencies are encouraged to adopt statements of policy recognizing the importance of the identified mineral resources, clarifying the intent that this information is to be used when making land use decisions in areas designated to be of statewide or regional significance, and emphasizing the conservation and development of identified mineral deposits.
- In addition to a summary of the data and the adoption of policies to protect the identified mineral resources, lead agencies are encouraged to develop implementation procedures. These should include at least one of the following: 1) Reference in general plan to location of identified mineral deposits, and a discussion of those areas targeted for conservation and possible future extraction by the lead agency; (2) use of overlay maps or inclusion of information on any appropriate planning maps to clearly identify mineral resource areas, and those areas targeted by the lead agency for conservation and possible future extraction; (3) use of special purpose overlay zones, mineral resource/open space zoning, or any other appropriate zoning that would (a) identify the presence of important mineral resources, and (b) restrict the encroachment of incompatible land uses, in those areas that are to be conserved; (4) record on property titles in the affected mineral resource areas a notice identifying the presence of important mineral resources; or (5) impose conditions upon incompatible land uses in and surrounding mineral resource zones for the purpose of mitigating the significant land use conflicts prior to approving a use that would otherwise be incompatible with mineral extraction.

The first lead agency general plan revision reviewed under these criteria was for the County of Placer.

Placer County's Mineral Resource Conservation Plan provides a thorough and informative introduction and description of mining activities within the County. Some of the specified criteria used in the plan include the use of special purpose zones, notice to properties adjoining existing and potential mineral extraction operations through recorded documents, and policies for protection of existing operations from encroachment of incompatible land uses. Overall, the plan is an outstanding example of what can be achieved in the area of mineral resource conservation and mined lands reclamation planning.

b. Other Uses of Classification Information

Information available in classification and designation reports is being used with increasing frequency by local agencies in planning studies and permit decisions. For example, during the past year, mineral resource information developed by the classification- designation program was used in no less than 22 local agency environmental documents. These documents are monitored carefully by the Department of Conservation to insure that factual information on classified and/or designated areas is brought before local decision-makers.

Information on mineral resources was included for project decisions in the Cities of Azusa, Rialto, San Bernardino, Colton, Livermore, Marina, Sacramento, Oxnard, San Diego, Carlsbad, and Poway, as well as in the Counties of Sacramento and San Diego.

6. Board Adopts Policies for Effective Implementation of the Surface Mining and Reclamation Act (SMARA)

The SMARA Task Force was created in the spring of 1984 in response to industry and local government concerns that the Surface Mining and Reclamation Act (SMARA) was not working or being administered as originally intended.

To look into these problems, and to recommend solutions to them, the Department of Conservaton brought together a wide spectrum of industry groups, governments, and organizations interested in California mining. The charge to this group, the SMARA Task Force, was to identify problems with SMARA as perceived by those outside of the Department, and to make broad and specific recommendations for change.

In late 1984, a series of recommendations for administrative, regulatory, and legislative changes relating to the existing mineral land classification-designation process, reclamation assistance, environmental documents, and federal/state cooperation were developed and presented to the State Mining and Geology Board.

The Board's Policy Committee held a two-day meeting in early 1985 to review in detail each of the Task Force recommendations. As a result, the Committee directed preparation of Resolution #85-5, a policy statement of intent by the Board to address many of the concerns raised by the Task Force. Resolution #85-5, adopted March 8, 1985, by the full Board, essentially resolves to: (1) undertake measures that will hasten completion of the State's classification-designation program; (2) review the existing reclamation program and propose alternatives for a more effective and user-oriented program; (3) work cooperatively with the Department of Conservation towards development of criteria for use of alternative environmental review documents in the designation process; and (4) investigate and develop recommendations for legislative and regulatory changes necessary to implement these policies.

7. Legislation Augmenting Funding for Support of the Surface Mining and Reclamation Act Programs

Senate Bill 593, by Senator Royce, raised from \$1.1 million to \$2 million the money available for appropriation each year for support of Surface Mining and Reclamation Act (SMARA) programs. SMARA provides guidance and assistance for the wise utilization of minerals and assures the reclamation of mined lands.

In 1980, Senator Nejedly provided funding of \$1.1 million for the Act from the Federal Mineral Lands Leasing Act. However, since then, the program has encountered the normal cost of living increases without the benefit of an increase in the funding level. In order to continue the program at its existing level, SB 593 augmented the 1985-86 fiscal year by \$363,000, and addressed the inflationary factor to the year 1990 by increasing the ceiling on the Act to \$2 million.

SB 593 was signed into law by the Governor on July 30, 1985, and chaptered as Chapter 393, Statutes of 1985.

B. Mined Lands Reclamation

1. Summary of Reclamation Program

SMARA also provides for a cooperative State and local program to assure that the adverse environmental impacts of mining are minimized or eliminated and that mined lands are reclaimed to a usable condition.

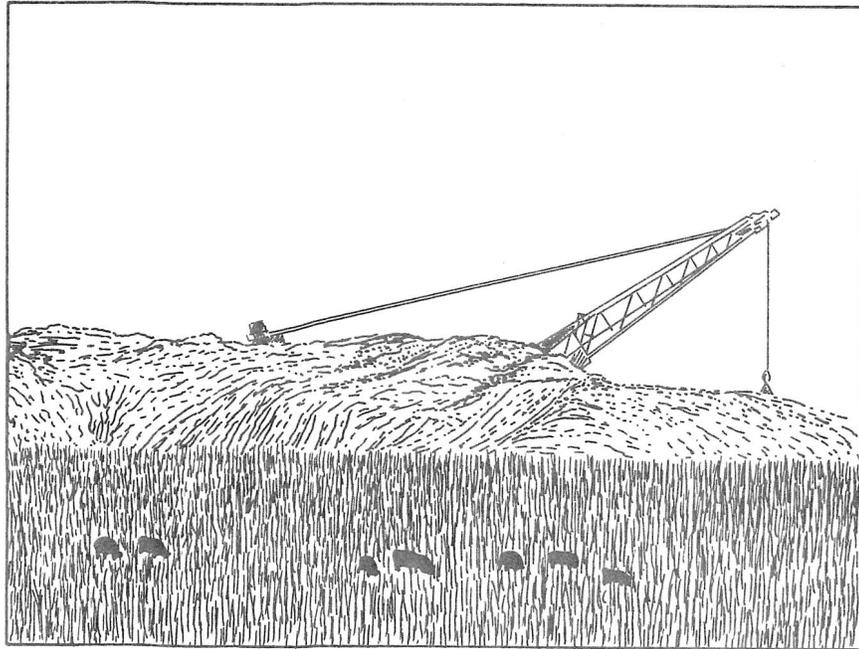
This is accomplished by a cooperative planning process that involves the mine operator, local government, and the State. Local agencies adopt mining ordinances that provide for the issuance of permits and approval of mine operators' reclamation plans. Standards that address local conditions and concerns are incorporated into these ordinances. In turn, all such ordinances are certified by the Mining and Geology Board, prior to becoming effective, to assure conformance with the Act's requirements.

Technical assistance for the preparation, review, and implementation of reclamation plans is provided to both lead agencies and mine operators by the Department of Conservation's Division of Mines and Geology.

The Board, working in cooperation with the Department of Conservation and the State Geologist, conducted a review of the reclamation program during the past year to determine how the needs of the public could best be served. As a result of this review, it was determined that a program that provides for mining engineering activities and investigations associated with a wide range of mining problems including mined land reclamation would best meet these needs.

2. Ordinance Certification Process

Local "lead" agencies with active surface mining operations in their jurisdictions are required by SMARA to adopt ordinances implementing the



"Mined Land Reclamation" courtesy of Ed Foster

Act's permit and reclamation plan requirements. The Mining and Geology Board provides guidance to aid local government in fulfilling this responsibility.

SMARA also requires the Board to review each lead agency ordinance that implements the Act and to certify that each such ordinance is in accordance with State policy, i.e., if it meets or imposes requirements more stringent than the surface mining and reclamation policies established by the Board. In the absence of a certified ordinance, the authority to approve the reclamation plans passes from the local lead agency to the Mining and Geology Board. The Board has, to date, not found it necessary to assume authority for approval of reclamation plans generated within jurisdictions that do not have a certified SMARA ordinance.

Certification ensures that each ordinance contains a basic core of procedural requirements, consistent with State policy, for the review and approval of reclamation plans and the issuance of permits to conduct surface mining operations. It remains the responsibility of each lead agency to utilize its ordinance to achieve the purposes of the Act in general, and in particular, to ensure that reclamation plans are prepared and approved for all lands disturbed by surface mining operations after January 1, 1976.

To date, the Board has certified ordinances from 89 lead agencies. These agencies include 57 of the State's 58 counties -- San Francisco County has no mining, thus is not considered to be a lead agency -- 31 cities, and the San Francisco Bay Conservation Development Commission, the lead agency for mining in the San Francisco Bay and Suisun Marsh.

C. Geohazards

1. Summary of Board Responsibilities for Geohazards in California

California's propensity for geologic hazards -- earthquakes, landslides, volcanism-- underscores the importance of understanding these phenomena and their potential effects upon our society. In 1973, the Division of Mines and Geology estimated that the cost of these hazards from 1970 to 2000, if current land-use practices continue, would amount to \$38 billion. To foster a better understanding of these hazards, the Mining and Geology Board represents the State's interest in developing and disseminating related geologic information through the State's geologic survey -- the Division of Mines and Geology.

The Board is also charged with more specific responsibilities under such laws as the Alquist-Priolo Special Studies Zones Act and the recently enacted Landslide Hazard Identification Act.

2. The Alquist-Priolo Special Studies Zones Act

The Alquist-Priolo Special Studies Zones Act provides for the mapping of active faults by the Division of Mines and Geology under policies established by the Board. Maps of these faults -- Special Studies Zones -- are provided to local government for their land-use planning and decision making. The Act prohibits construction of structures for human occupancy, as defined, across the trace of an active fault.

Forty-three (43) official maps of new and revised Special Studies Zones were issued pursuant to the provisions of the APSSZA January 1, 1985. These maps, which are listed below, had been sent to affected local agencies as well as concerned State agencies by the State Geologist for a 90-day review period on July 1, 1984.

- | | |
|-----------------------------|-----------------------|
| 1. Minden | 23. Rovana |
| 2. Woodfords | 24. NW 1/4 Bishop |
| 3. Markleeville | 25. NE 1/4 Bishop |
| 4. NE 1/4 Topaz Lake | 26. Mount Tom |
| 5. SE 1/4 Topaz Lake | 27. Tungsten Hills |
| 6. SW 1/4 Desert Creek Peak | 28. SW 1/4 Bishop |
| 7. Fales Hot Springs | 29. SE 1/4 Bishop |
| 8. SE 1/4 Fales Hot Springs | *30. NE 1/4 Big Pine |
| 9. SW 1/4 Bridgeport | 31. Alcalde Hills |
| 10. NE 1/4 Matterhorn Peak | 32. Pond |
| 11. NW 1/4 Bodie | *33. North of Oildale |
| 12. SW 1/4 Bodie | *34. Oildale |
| 13. NW 1/4 Mono Craters | *35. Oil Center |
| 14. NE 1/4 Mono Craters | *36. Rio Bravo Ranch |
| 15. Montgomery Peak NW | *37. Edison |
| 16. SE 1/4 Mono Craters | 38. Connor SW |
| 17. Montgomery Peak SW | *39. Coal Oil Canyon |
| 18. NE 1/4 Devils Postpile | *40. Mettler |
| 19. SW 1/4 Casa Diablo Mtn | *41. Eagle Rest Peak |
| 20. White Mtn. SW | 42. Pleito Hills |
| 21. White Mtn. SE | *43. Grapevine |
| 22. Mt. Morgan | |

*Revised zone map

Agencies affected by these new or revised Special Studies Zones include the Cities of Bakersfield, Bishop, and Mammoth Lakes, and the Counties of Alpine, Fresno, Inyo, Kern, and Mono.

The Board provided opportunity for public testimony on the preliminary maps at its regular business meeting of August 27, 1984. Following close of the 90-day comment period, the Board transmitted comments and recommendations to the State Geologist for incorporation into the official maps.

3. The Landslide Hazard Identification Act

The Landslide Hazard Identification Act (LHIA) was chaptered in September 1983, becoming effective January 1, 1984 (Chapter 997, Statutes of 1983). This Act formally recognized the problem of unstable slope hazards (landslides, mudslides, debris flows, slumps, soil creep, etc.) that occur throughout much of California. These problems have been underscored by the tragic loss of life and property due to storm-triggered slides over the past few years.

The LHIA provides for a state-local cooperative mapping program to identify landslide-prone areas in the path of urbanization. The Act requires the Director of the Department of Conservation to establish within the Division of Mines and Geology a Landslide Hazard Identification Program that is charged with developing maps of landslide hazards within urban and urbanizing areas of the State. Mapping of these areas by the Division of Mines and Geology is directed by priorities and guidelines established by the State Mining and Geology Board.

a. Initial Program Development

A LHIA pilot program for the 1984-85 fiscal year to map five metropolitan areas in Los Angeles and San Francisco was endorsed by the Mining and Geology Board in August 1984.

According to Section 2685(b) of the LHIA, priorities for the mapping program are to reflect the following factors in order of importance: (1) the severity of the landslide hazard, (2) the willingness of lead agencies and other public agencies to share the cost of mapping within their jurisdictions, (3) the availability of existing information, and (4) the need to supplement information used in existing landslide hazard abatement or prevention programs.

The Division of Mines and Geology held workshops in June 1984 in Los Angeles and San Francisco to acquire information on the adequacy of the program and to publicize the new program. Utilizing the conditions for priorities established by the Act and recommendations received from potential user groups, five areas were selected for the pilot program: (1) Petaluma "Dairy Belt": Sonoma County; (2) Danville - San Ramon - Sherburne Hills: Contra Costa County; (3) East-half Val Verde Quadrangle: Los Angeles and Ventura Counties; (4) West-half Newhall Quadrangle - Castaic Valley: Los Angeles County; and (5) Encinitas - Rancho Sante Fe Quadrangle: San Diego County.

Products initially envisioned for the pilot program were to include two maps for each approved project area; the first to be a geologic and



"California Landslide" courtesy of Ed Foster

slope-failure deposits and features map, the second to be a relative slope-stability or zonation map derived from the first map, both to be at a scale of 1:24,000.

b. Status of Pilot Program

Since conceptual approval of the pilot program in August 1984, the State Mining and Geology Board's Geohazards Committee has met periodically with the program staff to fine-tune the program and expected products. As a result of these meetings and an informal meeting with federal and state representatives, the products for each area include: (1) a relative landslide susceptibility map; (2) a landslides and related features map;

(3) a geologic map; and (4) a relative debris avalanche susceptibility map (for selected projects only).

Legends for the Landslide Susceptibility Map and the Landslide Features Map have been revised to reflect comments from the Geohazards Committee and other interested parties. The legend for the Debris Avalanche Susceptibility Map will be closely modeled after the Landslide Susceptibility Map, and the legends for the geologic maps will be different for each area.

c. Guidelines and Priorities

At its May 1985 regular business meeting, the Board considered the revised symbology and susceptibility map legend to be used for the final products of the pilot program. Section 2685 requires the Board to develop guidelines and priorities, in consultation with concerned federal, state, and local agencies. Accordingly, a workshop was scheduled for later that summer in Davis, California, for the purposes of meeting with governmental representatives and potential user groups to review the maps produced by the pilot program.

The maps, symbology, and explanations will continually be reviewed and recommendations developed for the future of the program after considering the usefulness of the products produced by the pilot program; and priorities will again be established according to the factors established by the Act.

